Amendments to the Claims

This Listing of Claims replaces all prior versions of claims in the subject application:

Listing of Claims

1. (Previously Presented) A polymerization process, comprising:

selecting (co)polymerizable monomers and macromonomers for copolymerization, wherein the relative reactivity ratio of the monomer and the macromonomer determines the rate of incorporation of the monomer and macromonomer into a graft (co)polymer; and

polymerizing the (co)polymerizable monomers and the macromonomers with a compatible macroinitiator to form the graft (co)polymer.

2. (Original) The process of claim 1, wherein the polymerization process is a radical polymerization process.

3. (Original) The process of claim 1, wherein the polymerization process is a controlled polymerization process.

4. (Original) The process of claim 3, wherein the polymerization process is a controlled radical polymerization process.

5. (Original) The process of claim 3, wherein the polymerization process is a controlled addition polymerization process.

Cancel Claims 6-7.

8. (Currently Amended) The polymerization process of claim 1, wherein the (co)polymerizable monomers and macromonomers are radically copolymerizable.

9. (Previously Presented) The polymerization process of claim 1, wherein the macromonomer comprises silicon.

10. (Previously Presented) The polymerization process of claim 1, wherein the macromonomer comprises a biocompatible monomer unit.

11. (Previously Presented) The polymerization process of claim 1, wherein the macromonomer is a polyolefin.

12. (Previously Presented) The polymerization process of claim 1, wherein the (co)polymerizable monomers are small molecule monomers.

13. (Previously Presented) The polymerization process of claim 1, further comprising forming a gradient graft copolymer.

14. (Previously Presented) The polymerization process of claim 1, further comprising:

polymerizing a second copolymerizable macromonomer comprising reactive terminal functionality different than the reactive functionality on the copolymerizable macromonomer.

15. (Previously Presented) The polymerization process of claim 1, further comprising:

forming a graft copolymer with a homogeneous distribution of grafts.

16. (Previously Presented) The polymerization process of claim 1, wherein the relative reactivity ratio is within the range of 0.5 to 1.5.

17. (Previously Presented) The polymerization process of claim 14, wherein the macromonomers and second copolymerizable macromonomers comprise different monomer units.

18. (Original) The process of claim 17, further comprising:

forming a gradient copolymer.

19. (Original) The process of claim 15, wherein the grafts comprise at least one lactic acid unit and the molecular weight distribution of the backbone is less than 2.

20. (Original) The process of claim 17, wherein the macroinitiator comprises a gradient or a block copolymer segment.

21. (Previously Presented) A polymerization process, comprising:
polymerizing free radically polymerizable monomers and free radically polymerizable macromonomers with a macroinitiator, wherein the macroinitiator comprises a graft copolymer.

22. (Original) The process of claim 21, further comprising:
forming a graft copolymer comprising cross linking functional groups; and crosslinking the copolymer to stabilize the morphology of the bulk graft copolymer.

23. (Previously Presented) A graft copolymer, comprising:
a backbone comprising a molecular weight distribution less than 2.0 and free radically polymerizable monomer units; and
graft segments comprising at least one of a polyolefin, a poly(lactic acid)and a polysiloxane distributed along the backbone.

24. (Original) The graft copolymer of claim 23, wherein the graft segments are distributed uniformly along the backbone.

25. (Previously Presented) The graft copolymer of claim 23, wherein the graft segments are distributed along the backbone with a higher concentration of the graft segments at one end of the backbone.

26. (Previously Presented) The graft copolymer of claim 23, wherein the graft segments are distributed along the backbone with a higher concentration of the graft segments at both ends of the backbone.

27. (Previously Presented) The graft copolymer of claim 23, wherein the graft segments are block copolymers and each block comprises different monomer units.

28. (Original) The graft copolymer of claim 27, wherein the copolymer forms a single homogeneous phase.

29. (Original) The graft copolymer of claim 27, wherein the copolymer forms a biphasic copolymer.

30. (Original) The graft copolymer of claim 27, wherein the copolymer forms a triphasic copolymer.

31. (Original) The graft copolymer of claim 27, further comprising: reactive functional groups.

32. (Original) The graft copolymer of claim 31, wherein the reactive functional groups are capable of stabilizing a morphology of the graft copolymer.

33. (Original) The graft copolymer of claim 32, wherein the reactive functional groups are crosslinkable functional groups.

34. (Original) The graft copolymer of claim 31, wherein the reactive functional groups are capable of crosslinking the one or more phases.

35. (Previously Presented) The graft copolymer of claim 27, wherein the relative mole fractions of the radically copolymerizable monomer units and graft segments effect the morphology of the graft copolymer.

36. (Original) The graft copolymer of claim 35, wherein the graft copolymer has a substantially cylindrical morphology for at least one of the phases.

37. (Original) The graft copolymer of claim 35, wherein at least two phases have a continuous morphology.

38. (Previously Presented) A polymerization process, comprising:

polymerizing poly(lactic acid) macromonomers in a controlled polymerization process with a copolymerizable monomer to form a graft copolymer having poly(lactic acid) branches.

39. (Previously Presented) The polymerization process of claim 38, wherein the poly(lactic acid) macromonomers comprise at least one end group selected from methacryloyl and acrlyoyl.

40. (Previously Presented) The polymerization process of claim 38, wherein the poly(lactic acid) macromonomer is selected from methyl methacrylate terminated poly(L-lactic acid), methyl acrylate terminated poly(D,L-lactic acid), and acrylate terminated (L-lactic acid).

41. (Previously Presented) The polymerization process of claim 40, wherein the copolymerizable monomer is an acrylate.

42. (Previously Presented) The polymerization process of claim 41, wherein the copolymerizable monomer is at least one of acrylates, methyl acrylates, butyl acrylates, methacrylates, and methyl methacrylates.

43. (Previously Presented) The polymerization process of claim 1, wherein the macroinitiator has a different composition than the macromonomer and is soluble in the macromonomer.

44. (Previously Presented) The polymerization process of claim 1, wherein the polymerizing is conducted in one of bulk, a solvent or in a biphasic medium.

45. (Currently Amended) The polymerization process of claim 44, wherein the polymerizing is conducted using a compatible co-solvent for both the macromonomer and the copolymer~~solvent and the solvent improves the solubility of the macromonomer in the graft (co)polymer~~.

46. (Previously Presented) The polymerization process of claim 44, wherein the polymerizing is conducted in a biphasic medium and the biphasic medium comprises an ionic liquid.

47. (Cancelled)

48. (Previously Presented) The process of claim 17, further comprising: comprising forming a block copolymer.

49. (Previously Presented) The process of claim 48, wherein the block copolymer is an AB block copolymer

50. (Previously Presented) The process of claim 48, wherein the block copolymer is an ABC block copolymer.